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SOVIET ARTILLERY UTILIZATION

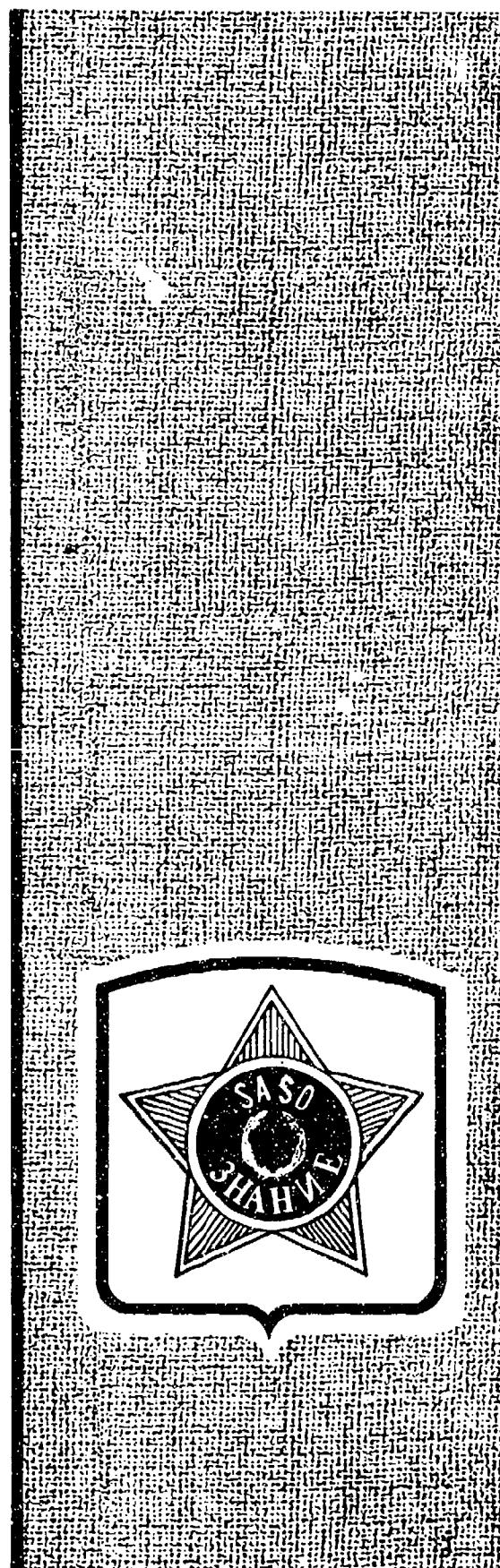
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SOVIET ARTILLERY UTILIZATION

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SOVIET ARTILLERY UTILIZATION

I. Introduction

As Soviet perceptions of future war have changed over time, so have their operational concepts and force structure. With the realization of the possibility (indeed the increasing probability) of a conventional phase to any future war, the Soviets have conducted an exhaustive study of their own and others military historical experience to determine solutions to the problems such a battlefield might present. A major aspect of this analysis was the realization that artillery will have to accomplish many of the missions previously allocated to nuclear weapons, particularly during the initial period of war. As a result, significant emphasis has been placed on developing the artillery force structure and concepts of employment in the last decade. This is apparent from the increased deployment of artillery systems in general and self-propelled systems in particular as well as the substantial attention artillery tactics receives in the Soviet military press. The allocation of gun tubes in the Motorized Rifle Divisions has increased from 168 to 228. The Army Artillery Regiments have likewise grown from 54 to 96 tubes. Development of new systems like the M1975 240 mm mortar and 120 mm airborne howitzer-mortar also point to continued interest in new designs. The Soviets have always held that combat can be subjected to scientific analysis and this influences their entire approach to planning and execution of combat actions. What is perceived in the West as inflexibility

is held up by the Soviets as the essence of their Military Science. Applying norms derived from historical and experimental experience provides the Soviet planner with predictable outcomes and determines his allocation of forces and means to ensure victory. Indeed, artillery utilization is subject to these same parameters in the overall context of combat operations. The annexes referred to in the text provide more detail and reflect this approach. The purpose of this paper is to present a concise summary of specific characteristics of Soviet artillery employment and force structure with emphasis on the systematic and scientific approach they employ. The sources used are primary Soviet/East European military writings and British sources derived from the same.

II. Artillery Allocation

Two major characteristics shape the Soviet approach to force allocation; these are concentration of combat power on the main axis and centralization of control. These principles provide the commander (in the Soviet view) with the maximum flexibility to influence the battle at his particular level. Determining the amount of artillery to be allocated depends on many factors. Before examining an example, it is necessary to determine the assets available to a commander for allocation.

At the highest level, the CinC of a Theater of Strategic Military Action (abbreviated as TVD in Russian) could expect to receive assets from the Reserves of the Supreme High Command

(RVGK). In turn he would allocate assets to the Front(s)* responsible for the main effort within the Theater. Similarly, Front would allocate organic and attached assets to Army and so on down to regimental or even battalion level. This principle of centralizing control at a high level and maintaining a large proportion of their artillery as major formation reserves enables the senior commander to concentrate combat power on the main axes from the highest to the lowest level. In addition, he would always retain some assets in order to influence the battle as it progressed. This process is implemented by the formation of Artillery Groups at each level. For example, the Army Artillery Group (AAG) is made up of organic assets and those allocated from Front. The AAG by its nature is responsible for the longer range fires and is principally involved in counterbombardment and attacking deep targets. The Divisional Artillery Group (DAG) likewise is made up of the artillery dispatched by the Army commander to the division in support of the Army plan plus the division's organic artillery (minus that allocated down to regiments). The Regimental Artillery Group (RAG) is formed in like manner. (Annex B).

In addition to the straightforward principle above, artillery can be allocated to units with special missions, for example to a battalion operating as a forward detachment or a force involved in an airborne or air assault operation (desant). 

*The Front is roughly equivalent to an Army Group but is a true combined arms formation including air.

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As an example of this top down allocation, a Tank Division operating on an Army's main axis could have the following artillery assets:

Organic:

Arty Bns of 3xTank Regts, 1xMR Regt-----72x2S 1/D-30 122mm (4 Bns)

Divisional Arty Regt-----36x2S 1/D-30 122mm (2 Bns),
18x2S3/D-20 152mm (1 Bn), 18xBM-21 MRL (1Bn)

From Army: 48x2S5 152mm (2 Bns)

From Front: 72x2S3 122mm (3 Bns), 18xBM-27 MRL (1 Bn), 12xM-1975 240mm Mortar, 12xM-1975 203mm gun

NOTE: Gun/howitzer batteries at Army level and above have 8 systems vice 6 at Division and below.

The Soviets have determined through analysis that 10% more ammunition (by norm) is required for each kilometer over ten kilometers range to the target. So to maximize their systems' ranges and minimize the required ammunition expenditure, they deploy their artillery as close to the front as possible. Their deployment would be subject to these guidelines:

<u>DISTANCE</u>	<u>MORTARS</u>	<u>GUNS AND HOWITZERS</u>	<u>MRLS</u>
Between wpns	15-60m	20-40m	15-20m
Between btry's	--	400-2000m (usually 1000m)	1000-2000m
From FEBA	500-1500m	1-4 km (RAG) 3-6 km (DAG) 5-8 km (AAG)	-- 3-6 km 5-8 km

Based on calculations derived from their own and others military experience, experiments and exercise data, the Soviets have determined that the minimum required densities for artillery employment are:

Against a prepared defense on the main axis-----100-120 wpns/km

Against hasty defenses on the main axis-----70-80 wpns/km

On a minor axis-----40 wpns/km

In defense-----45 wpns/km

These figures are derived by determining the number of targets to be engaged, the number of rounds required to service them and the time available to fire the rounds. Obviously, other factors come into play in determining the required weapons densities, for example, the availability of aircraft or helicopters to help support the attack. Integration of aircraft and/or helicopters into the fire equation is an easy process as they are subject to the same system of norms and allocation procedures; indeed, the Soviets use the term "fire integration" to describe this process.

The Soviets believe that Forward Detachments (peredovie otryadi) will play an extremely important role in operations on the contemporary battlefield. For comparison, the Operational Maneuver Group could be considered simply a Forward Detachment at the operational level. Forward Detachments are highly mobile, task organized, combined arms formations and have the mission of getting through the enemy's tactical depth very quickly and

thereby turning tactical success into operational success.

Forward Detachments as a rule avoid battle and advance as rapidly as possible to gain possession of an advantageous line or terrain feature thereby preempting establishment of a coherent defense. This allows the higher commander to maintain or increase the momentum of the main force. The Forward Detachment can become separated from the main force by as much as 35 km. At division level, the Separate Tank Battalion with attachments usually fulfills this role, although, Motorized Rifle Battalions can also act as Forward Detachments for regiments, especially against incomplete defenses. In designating a Forward Detachment, the division or regimental commander will virtually always attach a 2S1 SP artillery battalion to it. In addition, the Forward Security Element (GPZ in Russian, usually a Motorized Rifle Company with attachments) of the Forward Detachment will receive an artillery battery from this battalion. The presence of artillery in these formations is a signature of the special role they play in the offensive.

III. Artillery Planning

Planning for artillery fires is done in a similar manner to allocation, that is, it is a top down process. The senior commander and his Chief of Rocket Troops and Artillery (Chief of Artillery at regiment) conduct the initial analysis and allocate assets and ammunition to strike targets in support of the overall

plan. Those assets not committed are available then to the subordinate commanders for their own planning.

Target priorities are subject to the situation but in general follow this hierarchy:

- Nuclear weapons and nuclear capable systems
- Artillery and Air Defense
- Defensive strong points
- Command Posts, OPs and communications facilities
- Reserves and logistical support
- Routes of possible counterattacking forces

These targets are all described in terms of norms, that is, how many rounds are required to suppress or destroy them. This is the standard framework for planning using "battlefield calculus" and drives the entire operation by determining numbers of tubes required, where they locate, the logistics support necessary and when units displace.

Artillery operations are planned in four specific phases. The first phase is Fire Protection (ognevoe prikrytie). This phase was recently introduced to address the specific threat of Deep Battle systems against a Soviet force moving from the depths forward into battle. Next, is the Artillery Preparation of the Attack (artilleriiskaya podgotovka ataki). This continues until the forward battalions reach their deployment lines. Artillery Support of the Attack (artilleriiskaya podderzhka ataki) continues from the deployment line through the penetration of the battalions of the first echelon. Finally, Artillery

Accompaniment of the Attack in the Depths (artilleriiskoe soprovozhdenie nastupleniya voisk v glubine) are fires planned during the exploitation of the tactical penetration. (See Annex C for an example of planned fires by phase).

As stated above, the Soviets make great use of norms or calculations based on experience and experiments. These norms provide the Soviets with what they feel is a scientifically based system by which they can calculate to a great degree the effects of their fires on particular target types. Norms are also easily applied to computers and calculators and the Soviets are increasingly using such systems to speed up the planning process.

To begin planning, the commander determines the fire effects he wishes to achieve against the targets affecting his mission.

Target effects are:

- Fire for annihilation (unichtozhenie). Requires kill probability of 70-90% or 50-60% probability of destroying all of a group of targets.
- Fire for demolition (razrushenie). Physical destruction of installations or works.
- Fire for suppression (podavlenie). Requires 30% destruction of targets.
- Harrassing fire (iznurenie).

Based on this criteria, the norms are applied to determine how many rounds are required to achieve the effects desired. (See Annex D for examples of artillery norms). The time necessary to fire the requisite number of rounds then determines how many units will fire the mission. This time factor is extremely important in Soviet thinking. From analysis, they have

determined that a tank crew recovers from an artillery barrage in about 30 seconds; an ATGM crew in 1-2 minutes. In addition, the mobility of modern weapons systems means that they can effectively drive out from under artillery fire in less than five minutes. Furthermore, the Soviets believe that the effects of fire drop off rapidly after five minutes and as a result, have determined that 1/3 to 1/2 of the ammunition allocated to the mission must be fired in the first 3-5 minutes to have the desired effect. Finally, modern target acquisition systems allow counterbattery fire to be brought to bear in 4-7 minutes. This calculus has driven the Soviets to adopt shorter fire missions with larger units as a solution. The basic firing unit now is considered the Battalion (divizion). Current thinking is that of all missions fired, the battalion will fire 55-60%, Artillery Groups of various sizes will fire 25% and separate battery missions will only constitute 15-20% of the total. (See Annex E for an example of tactical calculations for artillery and Annex F for an example of calculating the length of a fire raid).

IV. Artillery Tactics

Some of the elements of artillery tactics have been already dealt with above. However, it is instructive to understand the sequence and types of fires the Soviets would employ in offensive operations.

The Soviets employ different types of fires depending on the situation.

- Fires at point targets: Usually fired by battery, platoon or single gun. This type of fire may be either direct or indirect.
- Barrage fire: Classified as either stationary or mobile and is defensive in nature. It is employed for example against a counterattacking force.
- Concentrated fire: Battalion (or battery) fire against important targets and usually of short (5 minutes) duration.
- Successive concentrations of aimed fire: A series of concentrated fires located throughout the width and depth of the enemy positions and fired according to a schedule.
- Fire curtain or rolling barrage: A single or double barrage used offensively. There can be 300-1000 m between main lines and 100-300 m between intermediate barrage lines.

The fire plan applies these types of fires according to target and the combined arms commander's maneuver scheme.

In organizing for combat, the artillery battalion will locate at least four observation points. One will be the the Command-Observation Point which is occupied by the artillery battalion commander with the supported unit commander. Three additional OPs will be established, one for each supporting battery with the respective battery commanders present. Additional OPs can be established (flank, forward) depending on the nature of the terrain. These OPs can be identified by the presence of the Artillery Command and Reconnaissance Vehicle (ACRV) based on the chassis of the MTLB.

Communications is based first on radio and links the artillery commander with his Chief of Staff in the fire direction center in the vicinity of the gun positions. The battery commanders in their respective OPs are also on this net as well

as having communications with their respective batteries. The chief of staff communicates to the firing batteries as well as the various logistical support agencies. (See Annex G for example of radio net). Recently, the addition of a forward air controller (avianavodchik) in the COP has become more common, especially for units operating well forward.

The fires are delivered according to the fire plan and some assets may be held in reserve to deal with uncovered targets or counterattacking forces. The combined-arms commander designates the lifting and shifting of fires. Requests for fires in a Western sense are not used. Subordinate commanders with no organic artillery assets that require support report their situation to the higher commander and rely on his judgement to allocate supporting fires to a particular tactical situation. In this manner, fires are reserved by the higher commander to facilitate maneuver and exploit success.

The fire preparation lasts 40-50 minutes but it is not the traditional uninterrupted barrage of Western stereotype. The dangers outlined above dictate short, powerful fire raids by battalions or even Artillery Groups and multiple displacements. This is an example of a typical Soviet preparation:

- H-50 to H-45: Counterbombardment and strikes on artillery and air command and control and nuclear systems.
- H-45 to H-30: Air attacks while artillery displaces to avoid counterbattery fires. These displacements may take place by battery or battalion and will be 3 to 4 km in length.
- H-30 to H-25: Counterbombardment based on assessment of previous success or new targets.

- H-20 to H-2: Strikes on defensive strong points as units close to assault lines. MRL used in final strike on critical targets for maximum suppression.
- H-2 to H+3: Final counterbombardment and transition to support phase.

(See Annex C for an example of a fire plan by phase).

While supporting the attack, the following safety distances apply:

Unobserved fires up to 10 km: 500 m for artillery
over 10 km: 700 m for artillery
both: 1000 m for rocket launchers

Observed fires: 400 m for troops on foot
300 m for BMPs
200 m for tanks

These distances along with the speed of the attacking units often determine the duration of the fire strikes, especially on the forward defensive positions. They are lifted and shifted on order of the senior combined arms commander, not the commander of the attacking subunit or the artillery commander. (See Annex F).

V. Conclusion

The Soviet approach to artillery planning and employment is significantly different from the Western approach. However, right or wrong it appears to us, to the Soviets it is scientifically founded on detailed analysis of the effects and capabilities of artillery and provides them with a detailed

framework within which to plan. All things being equal, the Soviets believe that their scientific approach to battle in general and artillery fires in particular gives them an advantage in being able to predict success and failure, especially on the critical main axes. This in turn, they believe, will allow them rapidly to turn predictable tactical success into the more important operational success that ultimately insures the breaking down of the defense from within and hence ultimate victory on the modern battlefield.

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